

What is claimed is:

1. A method of forming a silicon thin-film which comprises:
a step of arranging in one or more parts of a liquid arranging surface liquid which contains a silicide comprising ring silane and/or a derivative thereof, said ring silane comprising silicon and hydrogen; and
a step of forming a silicon thin-film by vaporizing silicide from said liquid and supplying said silicide to a thin-film-forming surface.
2. A method of forming a silicon thin-film according to claim 1, wherein said thin-film-forming surface is identical to said liquid arranging surface.
3. A method of forming a silicon thin-film according to claim 1, wherein a solution, in which cyclopentasilane and/or silylcyclopentasilane are/is dissolved in an organic solvent, is used as said liquid which contains a silicide.
4. A method of forming a silicon thin-film according to claim 1, which further comprises a step of, in order to selectively deposit a silicon thin-film, forming on said thin-film-forming surface an active region and inactive region for chemical vapor deposition (CVD) before performing said step of arranging said liquid.
5. A method of forming a silicon thin-film according to claim 4, wherein said step of forming an active region and inactive region for CVD includes:
a step of, when R is a fluoroalkyl group in which hydrogen on an

end side of an alkyl group is substituted with fluorine and X is an alkoxy group or a halogen group, forming a self-assembled film on said thin-film-forming surface in which a hydroxyl group exists, using a silane derivative indicated by the general formula RSiX_3 ; and

a step of, in order to form an active region and inactive region for CVD, performing a physical treatment of said self-assembled film and removing a part of said self-assembled film, which becomes an active region for CVD.

6. A method of forming a silicon thin-film according to claim 5, wherein said step of removing said self-assembled film performs ultraviolet ray irradiation through a photomask or electron beam irradiation to a necessary part as said physical treatment.

7. A method of forming a silicon thin-film according to claim 1, wherein said step of arranging said liquid arranges said liquid by an inkjet method.

8. A method of forming a silicon thin-film according to claim 1, wherein said step of vaporizing said silicide is performed while running a gas selected from a group including an inactive gas, a hydrogen gas and a mixed gas of an inactive gas and a hydrogen gas, substantially in parallel with said liquid arranging surface.

9. A method of forming a silicon thin-film which comprises:

a step of arranging in one or more parts of a first substrate for arranging liquid which contains a silicide comprising ring silane and/or a

derivative thereof, such ring silane comprising silicon and hydrogen;

arranging a thin-film-forming surface of a second substrate for forming a thin-film to be set facing a liquid arranging surface of said first substrate; and

vaporizing silicide from said liquid arranged on said liquid arranging surface on said first substrate and supplying said silicide to said thin-film-forming surface on said second substrate.

10. A method of forming a silicon thin-film according to claim 9, wherein a solution in which cyclopentasilane and/or silylcyclopentasilane are/is dissolved in an organic solvent is used as said liquid containing silicide.

11. A method of forming a silicon thin-film according to claim 9, which further comprises a step of, before performing said step of arranging said liquid, forming an active region and inactive region for CVD on said thin-film-forming surface of said first substrate in order to selectively deposit a silicon thin-film.

12. A method of forming a silicon thin-film according to claim 9, wherein said step of forming an active region and inactive region for said CVD comprises:

a step of, when R is a fluoroalkyl group in which hydrogen on an end side of an alkyl group is substituted with fluorine and X is an alkoxy group or a halogen group, forming a self-assembled film on said thin-film-forming surface wherein a hydroxyl group exists, using a silane derivative indicated by the general formula RSiX_3 ; and

a step of performing a physical treatment of said self-assembled film and removing a part of said self-assembled film which becomes an active region for CVD.

13. A method of forming a silicon thin-film according to claim 12, wherein said step of removing said self-assembled film performs ultraviolet ray irradiation through a photomask or electron beam irradiation to a necessary part as said physical treatment.

14. A method of forming a silicon thin-film according to claim 9, wherein said step of arranging said liquid arranges said liquid by an inkjet method.

15. A method of forming a silicon thin-film according to claim 9, wherein said step of vaporizing said silicide is performed while running a gas selected from a group including an inactive gas, a hydrogen gas and a mixed gas of an inactive gas and a hydrogen gas, substantially in parallel with said liquid arranging surface.

16. A method of forming a silicon thin-film according to claim 9, wherein, in said step of vaporizing said silicide, said second substrate is heated so as to have a temperature at which said thin-film-forming surface can decompose a vaporizing matter of silicide, and by the heat emitted from said second substrate pursuant to the heating, said first substrate is heated to a temperature at which silicide is vaporized from said liquid.

17. A method of forming a silicon thin-film which comprises:

a step of forming on one or more parts of a liquid arranging surface for arranging liquid on a first substrate an active region and inactive region for CVD;

a step of arranging on said liquid arranging surface liquid which contains a silicide comprising ring silane and/or a derivative thereof, said ring silane comprising silicon and hydrogen;

a step of arranging a thin-film-forming surface for forming a second substrate to be set facing the liquid arranging surface of said first substrate; and

a step of vaporizing silicide from said liquid arranged on said liquid arranging surface of said first substrate and supplying said silicide to said thin-film-forming surface of said second substrate to selectively deposit a silicon thin-film.

18. A method of forming a silicon thin-film according to claim 17, wherein a solution in which cyclopentasilane and/or silylcyclopentasilane are/is dissolved in an organic solvent is used as said liquid containing silicide.

19. A method of forming a silicon thin-film according to claim 17, wherein said step of forming an active region and inactive region for CVD comprises:

a step of, when R is a fluoroalkyl group in which hydrogen on an end side of an alkyl group is substituted with fluorine and X is an alkoxy group or a halogen group, forming a self-assembled film on said thin-film-forming surface on which a hydroxyl group exists, using a silane derivative

indicated by the general formula RSiX_3 ; and

a step of performing a physical treatment of said self-assembled film and removing a part of said self-assembled film which becomes an active region for CVD in order to form an active region and inactive region for chemical vapor disposition.

20. A method of forming a silicon thin-film according to claim 19, wherein said step of removing said self-assembled film performs ultraviolet ray irradiation through a photomask or electron beam irradiation to a necessary part as said physical treatment.